

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

RONALD LOUIS QUAGLIA et al.

Serial No.: 10/065,471

Filed: October 22, 2002

For: BRAKE ASSEMBLY WITH TUNED MASS DAMPER

Attorney Docket No.: 201-0782 GAS (FMC 1640 PUS)

Group Art Unit: 3683

Examiner: Devon C. Kramer

APPEAL BRIEF UNDER 37 C.F.R. § 41.37

Mail Stop Appeal Brief - Patents
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P.O. Box 1450
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Sir:

This is an Appeal Brief from the final rejection of claims 1, 2, 6, 8, 9 and 13 of the Office Action mailed on December 8, 2004 for the above-identified patent application.

I. REAL PARTY IN INTEREST

The real party in interest is Ford Global Technologies, LLC ("Assignee"), a corporation organized and existing under the laws of the state of Michigan, and having a place of business at Parklane Towers East, Suite 600, One Parklane Boulevard, Dearborn, Michigan 48126, as set forth in the assignment recorded in the U.S. Patent and Trademark Office on April 22, 2003 at Reel 013987/Frame 0838.

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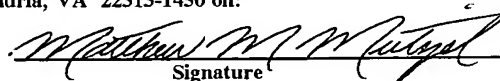
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CERTIFICATE OF MAILING UNDER 37 C.F.R. § 1.8

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II. RELATED APPEALS AND INTERFERENCES

There are no appeals or interferences known to the Appellant, the Appellant's legal representative, or the Assignee which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

Claims 1-13 are pending in this application. Claims 1, 2, 6, 8, 9 and 13 have been rejected and are the subject of this appeal.

IV. STATUS OF AMENDMENTS

All amendments previously filed in this application have been entered. No amendment after the final rejection was filed.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The invention relates to a backplate (17) for mounting a brake pad (19) of a vehicle disk brake (11). The backplate (17) includes at least one hole (26) and a tuned mass damper (28). The tuned mass damper (28) has a mass (32) disposed within the hole (26) for damping vibrations associated with the operation of the vehicle disk brake (11). An air gap is disposed between at least one surface of the tuned mass damper (28) and the hole (26). (See Figures 1 and 2, paragraphs [0020-0026].)

Another expression of the invention relates to a brake assembly. The brake assembly includes a brake pad (19), a backplate (17), and a tuned mass damper (28). The brake pad (19) is operative to apply a braking force to a brake rotor (13). The backplate (17) is attached to the brake pad (19) and has a hole (26). The tuned mass damper (28) dampens vibrations associated with operation of the brake assembly. More specifically, the tuned mass damper (28) is attached to the backplate (17) and includes a mass (32) disposed within the hole

(26). An air gap is disposed between at least one surface of the tuned mass damper (28) and the hole (26). (See Figures 1 and 2, paragraphs [0020-0026].)

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1, 2, 8 and 9 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,193,024 issued to Heppes et al.

Claims 1 and 8 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 3,198,294 issued to Stacy.

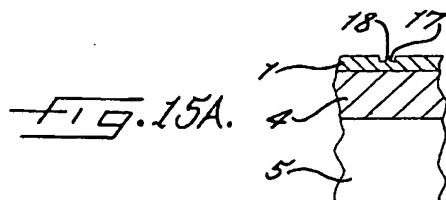
Claims 6 and 13 stand rejected under 35 U.S.C. § 103(a) in view of U.S. Patent No. 6,193,024 issued to Heppes et al. or U.S. Patent No. 3,198,294 issued to Stacy in view of U.S. Patent No. 4,691,810 issued to Matsuzaki.

VII. ARGUMENT

A. Claims 1, 2, 8 and 9 Are Patentable Under 35 U.S.C. § 102(b) Over U.S. Patent No. 6,193,024

U.S. Patent No. 6,193,024 issued to Heppes et al. (hereinafter "Heppes '024") does not disclose all of the limitations recited in claims 1, 2, 8 and 9 as discussed below. As noted in § 2131 of the *Manual of Patent Examining Procedure*, "a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Similarly, "the identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). In addition, "the elements must be arranged as required by the claim." *In re Bond*, 910 F.2d 831 15, USPQ2d 1566 (Fed. Cir. 1990).

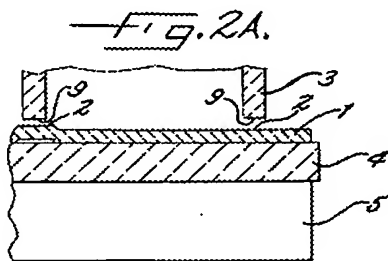
Claim 1 requires a "backplate having at least one hole formed therein and a tuned mass damper having a mass disposed within the hole for damping vibrations associated with the operation of the vehicle disk brake." Heppes '024 does not disclose a backplate that has a tuned mass damper having a mass that dampens vibrations. In the final Office Action, the Examiner cited Figure 15A (reproduced below) and stated that radial material strip 18 was the mass of a tuned mass damper (see final Office Action, page 2). However, Heppes '024 discloses that the radial material strip 18 merely resists pressure applied by a brake piston or caliper and does not dampen vibrations.



Referring primarily to Figure 15A, Heppes '024 discloses a damping plate 1 for reducing wear and increasing "precision in displacing the pressure point" at which pressure is applied with a brake piston or caliper (see column 1, lines 54-56). The damping plate 1 has "a pressure-transferring surface which has at least two areas with different resilience" (see column 1, lines 58-60). Due to the different areas of resilience "the pressure point is no longer displaced geometrically but rather by different pressure resistances, i.e., resilience, in the pressure-transferring surface" (see column 2, lines 1-4). Different resilience (i.e., pressure resistance) is provided by removing material (see column 4, lines 45-48). More specifically, cut-outs 17 are provided "to precisely adjust the degree and direction of desired pressure point displacement" (see column 5, lines 11-14). The cut-outs 17 can run radially, resulting in "a radial material strip 18 between two neighboring cut-outs" (see column 5, lines 16-19). The radial material strip 18 is disposed "flush with the top of the non-cut-out area of the pressure transferring surface 2 so that a pressure-applying unit 3 contacts the pressure-transferring surface 2 at least in sections when pressure starts to be applied" (column 5, lines 20-23). In other words, the pressure-applying unit 3 applies pressure against the radial material strip 18 and does not permit the radial material strip 18 to move. Since the radial material strip does not move, it cannot possibly provide any dampening effect or act as a tuned mass damper. Indeed, Heppes '024 does not disclose or even remotely suggest that the radial material strip 18 dampens vibrations as required by claim 1. This is further evidenced by the fact that the Examiner was unable to point to any passage in Heppes '024 to support such a contention. Since Heppes '024 does not disclose a backplate having a tuned mass damper as claimed, this rejection must be reversed.

Claim 8 requires a "backplate having a hole formed therein" and "a tuned mass damper having a mass disposed within the hole in the backplate and attached to the backplate for damping vibrations associated with the operation of the brake assembly." Heppes '024 does not disclose a tuned mass damper that is disposed in a hole in a backplate and attached to the backplate for dampening vibrations as required by claim 8. As discussed above, the

radial material strip 18 in Heppes '024 does not dampen vibrations and cannot properly be considered a mass of a tuned mass damper. In addition, Heppes '024 does not disclose a backplate that is attached to a brake pad. In the final Office Action, the Examiner stated that damping plate 1 was a backplate and that brake lining 5 was a brake pad (see final Office Action, page 2 and Figure 2A reproduced below). The damping plate 1 is "disposed on a base plate 4" (see column 3, line 59). A brake lining 5 is disposed on the other side of the base plate 4 (see column 3, line 60). Therefore, the damping plate 1 is separated from the brake lining 5 by the base plate 4 and is not attached to the brake lining.



Moreover, in the final Office Action, the Examiner acknowledged that the damping plate is not attached to the brake lining. Specifically, the Examiner stated "while not directly attached or in direct contact, clearly these items are connected together" (see final Office Action, page 5). Claim 8 recites a backplate attached to a brake pad, not a backplate connected to a brake pad. It is impermissible to ignore claim language as the Examiner has done. Therefore, this rejection must be reversed.

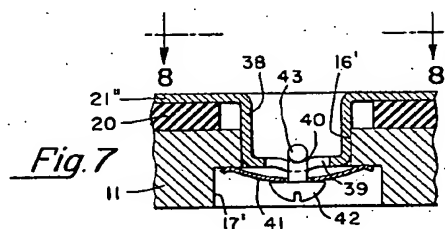
Claims 2 and 9 depend on claims 1 and 8, respectfully. Therefore, Applicants believe the rejection of these claims must be reversed for the reasons previously discussed.

**B. Claims 1 and 8 Are Patentable Under 35 U.S.C. § 102(b)
Over U.S. Patent No. 3,198,294**

U.S. Patent No. 3,198,294 issued to Stacy (hereinafter "Stacy '294") does not disclose all of the limitations recited in claims 1 and 8 as discussed below. As noted in § 2131

of the *Manual of Patent Examining Procedure*, “a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Similarly, “the identical invention must be shown in as complete detail as is contained in the ... claim.” *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236 , 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). In addition, “the elements must be arranged as required by the claim.” *In re Bond*, 910 F.2d 831 15, USPQ2d 1566 (Fed. Cir. 1990).

Claim 1 requires a “backplate having at least one hole formed therein and a tuned mass damper having a mass disposed within the hole for damping vibrations associated with the operation of the vehicle disk brake.” Stacy ‘294 does not disclose a tuned mass damper disposed in a backplate hole for damping vibrations as required by claim 1. In the Office Action, the Examiner stated that reference number 42 was the mass of a tuned mass damper (see final Office Action, page 3). Reference number 42 refers to a “a slotted head 42” of a fastener (see column 4, line 41-42 and Figure 7 reproduced below). The function of the slotted head 42 is “to be rotated by a screwdriver,” not to dampen vibrations (see column 4, line 42). Indeed, Stacy ‘294 does not disclose or even remotely suggest that the slotted head 42 dampens vibrations as required by claim 1. This is further evidenced by the fact that the Examiner was unable to point to any passage in Stacy ‘294 for support.



Similarly, the fastener to which the slotted head 42 is attached cannot properly be interpreted as a tuned mass damper. Stacy '294 discloses that "plate 21" is secured by a plurality [sic] of fasteners each of which comprises a Belleville spring 41" (see column 4, lines 38-39). The bias of the Belleville spring 41 "forces plate 21" against [a rubberlike] pad 20" such that plate 21" "is free to move inwardly and outwardly due to the resilient suspension thereof between the pad and springs 41 (see column 4, lines 46-48). As such, the fasteners disclosed in Stacy '294 enable movement of plate 21" rather than dampen vibrations as required by claim 1. Indeed, Stacy '294 does not disclose or even remotely suggest any dampening of vibrations as required by claim 1. This is further evidenced by the fact that the Examiner was unable to point to any passage in Stacy '294 for support. Since Stacy '294 does not disclose a backplate having a tuned mass damper as claimed, this rejection must be reversed.

Claim 8 requires a "backplate having a hole formed therein" and "a tuned mass damper having a mass disposed within the hole in the backplate and attached to the backplate for damping vibrations associated with the operation of the brake assembly." Stacy '294 does not disclose a tuned mass damper that is disposed in a hole in a backplate and attached to the backplate for dampening vibrations as required by claim 8. As discussed above, the slotted head 42 in Stacy '294 does not dampen vibrations and cannot properly be considered a mass of a tuned mass damper. In addition, the slotted head 42 is not attached to a backplate as required by claim 8. Instead, the slotted head 42 is attached to a fastener having a "T-shaped portion 43" (see column 4, line 43 and Figure 7). The T-shaped portion 43 is "adapted to be inserted through slot 39" of stud 38 and "turned 90 deg. so as to seat in groove 40" of stud 38 (see column 4, lines 43-44). As such, Stacy '294 does not disclose or remotely suggest that slotted head 42 is attached to backplate 11. Since Stacy '294 the does not disclose elements arranged in the manner required by claim 8, this rejection must be reversed.

**C. Claims 6 and 13 Are Patentable Under 35 U.S.C. § 103(a)
Over U.S. Patent Nos. 3,198,294 or 6,193,024
In View Of U.S. Patent No. 4,691,810**

Claims 6 and 13 depend on claims 1 and 8, respectively. Therefore, Applicants believe the rejection of these claims must be reversed for the reasons previously discussed.

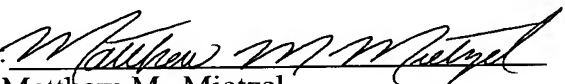
CONCLUSION

The cited references do not disclose all the limitations recited in claims 1, 2, 6, 8, 9 and 13. In addition, the Examiner improperly ignored claim language when rejecting claim 8. Therefore, the final rejection of these claims should be reversed.

The fee of \$500 as applicable under the provisions of 37 C.F.R. § 41.20(b)(2) is enclosed. Please charge any additional fee or credit any overpayment in connection with this filing to Ford Global Technologies LLC Deposit Account No. 06-1510. A duplicate of this page is enclosed for this purpose.

Respectfully submitted,

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Enclosure - Appendices

VIII. CLAIMS APPENDIX

1. A backplate for mounting a brake pad of a vehicle disk brake, the backplate having at least one hole formed therein and a tuned mass damper having a mass disposed within the hole for damping vibrations associated with the operation of the vehicle disk brake and an air gap disposed between at least one surface of the tuned mass damper and the hole.

2. The apparatus according to claim 1 wherein the hole is blind, a thinned section of the backplate forming a bottom of the hole, and the tuned mass damper comprises the bottom of the hole and a mass attached directly to the bottom such that deflection of the bottom permits the tuned mass damper to oscillate relative to the backplate.

6. The apparatus according to claim 1 wherein the hole is located at an anti-node area of an operational deflection shape.

8. A brake assembly comprising:
a brake pad operative to apply a braking force to a brake rotor, said brake pad being subject to vibration during braking;
a backplate attached to the brake pad, said backplate having a hole formed therein; and
a tuned mass damper having a mass disposed within the hole in the backplate and attached to the backplate for damping vibrations associated with operation of the brake assembly;
wherein an air gap is disposed between at least one surface of the tuned mass damper and the hole.

9. The apparatus according to claim 8 wherein the hole is blind, a thinned section of the backplate forming a bottom of the hole, and the tuned mass damper comprises the bottom of the hole and a mass attached directly to the bottom such that deflection of the bottom permits the tuned mass damper to oscillate relative to the backplate.

13. The apparatus according to claim 8 wherein the hole is located at an anti-node area of an operational deflection shape assumed by the backplate during application of the brakes.

IX. EVIDENCE APPENDIX

None

X. RELATED PROCEEDINGS APPENDIX

None